

The University of Chicago

RUBBER RIVER: AN ACCOUNT OF THE RISE AND COLLAPSE OF THE AMAZON BOOM

A PART OF A DISSERTATION SUBMITTED
TO THE FACULTY OF THE DIVISION OF
THE SOCIAL SCIENCES IN CANDIDACY FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

INTERNATIONAL RELATIONS
1941

By
JOHN F. MELBY

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Francisco de Orellana's voyage down the Amazon in the middle of the sixteenth century was the prelude to a long and exciting period of South American history culminating in the feverish seventy-five years of the great rubber boom that finally collapsed in 1910. The first three hundred years of this history were adventurous ones; intrepid Jesuit and Carmelite fathers penetrated the farthest recesses of the Amazon valley in pursuit of their missionary objectives. The expulsion of the Black Robes from all the Portuguese colonies by the Marquis of Pombal in 1757 ended the firm but gentle sway which they had exercised over the scattered Indian tribes. They had, in addition, made another contribution to Portuguese power. By their assistance in consolidating far to the west the domains of Lisbon, they had balked Spain in her desire to move as deep into the heart of the continent as possible. The century following the departure of the Jesuits witnessed an orderly, if comparatively uneventful, development of agriculture. The chief features of this period were the transition from a colonial to an independent status, and the ensuing decade of violence and disorder.¹

I

Until the discovery by Charles Goodyear that rubber could be made useful by means of vulcanization, the sticky substance had been largely a curiosity. The Indians of the Amazon had long been familiar with it and used it for waterproofing and to make primitive playthings. A few efforts had also been made to export it in the form of rubber shoes, but progress along commercial lines was limited because the natural product was too easily affected by weather conditions. Vulcan-

¹ Basílio de Magalhães, *Expansão Geographica do Brasil Colonial* (2nd ed., São Paulo, 1935), pp. 184-196; J. Fred Rippy and Jean Paul Nelson, *Crusaders of the Jungle* (Chapel Hill, 1936), *passim*.

ization opened a new era for rubber; and life began to stir in the valley after 1850.

The first sign of activity was the organization of the Companhia de Navegação do Amazonas, holding a monopolistic charter from the Brazilian government to exploit steam navigation throughout the Amazon and its tributaries. Distance and difficulty of transportation have always been inexorable facts in the history of the river. The Companhia do Amazonas, as it was known, was an encouraging step in the solution of the problem. The service which the company provided was both good and extensive. Through its facilities alone could rubber be transported expeditiously, and in large quantities, to the great markets at Belém and Manaus.

Financially, the company was profitable. Its charter provided for a substantial subsidy from the federal government with the qualification that it would be paid as long as dividends did not exceed twelve per cent. It was not long before profits went beyond this limit. In order to retain the subsidy, the company proceeded to increase the face value of the original stock so that, within a dozen years, actual dividends on this stock amounted to some thirty and forty per cent annually. Thus it was possible for the original shareholders to take all the profits and at the same time continue to receive an unneeded subsidy. Such practices were at times criticized by conscientious officers of the government, but the attack against them was never carried out successfully.

In 1874 the entire assets were bought by an English group which reorganized the concern as the Amazon Steam Navigation Company, capitalized at six hundred and twenty-five thousand pounds. The British had now only to sit back and enjoy the profits since the real pioneering work and development had been done by the Brazilians. The British firm did nothing more than maintain and expand the existing shipping facilities, but it should be added that the furnishing of good river transportation was in itself a vital contribution to the growth of the rubber industry.²

² William R. Manning, *Diplomatic Correspondence of the United States, Inter-American Affairs, 1831-1860*, II (Washington, 1932), p. 455; A. C. Tavares Bastos, *O Valle do Amazonas* (2nd ed., São Paulo, 1937), pp. 176-195 (the first edition

The second sign of changing times was the effort to attract immigration. Rubber required large quantities of cheap and hardy labor. All that was available was the native Indian whose numbers were altogether too small to furnish what was demanded. Furthermore, the Indian in his docility was not sturdy enough to withstand the monotony of regular employment, the physical hardships of rubber gathering, or the brutality of forced labor. Consequently, he either perished in his work or retired into unused lands in order to escape servitude. The only solution to the problem was the importation of labor.

During the course of rubber prosperity numerous attempts were made to attract settlers on a large scale. All schemes ended in failure. Several efforts were designed to secure Japanese labor, but few Japanese appeared. Others involved Europeans, yet the vast majority of the few who actually reached the valley died from the ravages of disease and malnutrition.

One of the extremely interesting experiments concerned Confederate exiles. These were Southerners ruined by the Civil War and disgusted with the Reconstruction. Rather than continue to live under such conditions, several thousands of them made plans to start life anew in other parts of the world. The majority of those who went to Brazil established themselves in the southern part of the country, but one group settled at Santarém, on the Tapajoz River. Matters went badly from the start. The settlers at Santarém arrived without adequate knowledge of the country to which they had come. Moreover, they possessed no money and little equipment, and spoke no Portuguese. Few of them had ever done any actual physical labor, and many in the group were too old to begin life in the tropics. Before long, most of the colonists were clamoring to return to the United States, convinced that the Reconstruction was preferable to the hardships of a pioneering experience. And despite their total lack

was published in 1866); *Relatorio do Ministro de Obras Publicas, 1866* (Rio de Janeiro, 1866), pp. 133 *et seq.*

of resources, many of the dissatisfied exiles managed to be repatriated.³

On the other hand, some Americans did remain; and their descendents are still to be found, though they seldom speak English or have more than a hazy recollection of their background. Some have prospered, and the two sons of an original settler have one of the few successful rubber plantations in the valley. The general failure, however, was a source of great disappointment to those who had hoped that the venture might be the beginning of a large-scale white immigration from the United States that would provide the hands needed for the rubber industry.

The labor situation appeared hopeless until Nature interposed her solution by bringing drought to Ceará. This northeast corner of Brazil had long been noted for its droughts, but none was more severe than the celebrated one of 1879. The inhabitants were faced with the choice of death or emigration, and, as a result, tens of thousands of people left for the Amazon. The *Cearenses* died almost as fast as they arrived, but the recruiters of labor were persuasive, and each cessation of the rains in Ceará was followed by a new exodus to the Amazon to take the place of those who had perished. This rapid and disastrous turnover in workers was a perennial source of concern, but as long as some sort of help was available the gathering of rubber in large quantities was possible. Rubber had at last secured its labor.⁴

The third indication of new life was the controversy over the opening of the Amazon to world traffic. The great Brazilian waterway was the last of the principal rivers of the world to remain closed. Even after the opening of the Río de la Plata prior to 1850, an event which might have served as a precedent, Brazil resolutely refused to follow the example of her southern neighbors. Thanks to the persuasiveness of

³ See Lawrence F. Hill, *The Confederate Exodus to Latin America* (Columbus, 1936); William R. Manning, *op. cit.*, p. 510; and *Dados Estatísticos e informações para os Immigrantes* (Pará, 1886), p. 480.

⁴ This account has been pieced together from articles and comments scattered through the *India Rubber World* of New York and the *Revista da Associação Commercial do Amazonas* of Manaus.

Lieutenant Matthew Fontaine Maury, the United States played a leading rôle in the movement to internationalize the Amazon. Maury was a hydrographer of solid reputation, and his efforts were brought to the attention of, and commended by, the American Congress.

The American public was also greatly intrigued by the possibilities of the Amazon valley, especially in the South, where southern ports looked forward to the expansion of their shipping trade. For all these reasons, therefore, the Navy Department ordered Lieutenants William L. Herndon and Lardner Gibbon to enter the Amazon region from the Pacific side of the continent, to follow the course of the river to its mouth, and to report their findings. The results of the undertaking convinced the proponents of the opening of the river that their dreams of the wealth of the valley were true.

Possibly alarmed at the exuberant manifestations of interest on the part of the American public, Brazil continued to be wary. Despite all diplomatic urgings, she steadfastly refused to yield. On the other hand, during the latter part of the 1850's, with the opening of the West to colonization and the brewing of those difficulties which form the background to the Civil War, the interest of the United States in the Amazon began to lag. As a consequence, the question was held in abeyance until 1864. By this time there had been a shift in Brazilian opinion which the visit of Professor Louis Agassiz and the concern of the emperor in his work powerfully aided. The result was the decree of December 7, 1866, opening the river and certain tributaries to the merchant shipping of the world. The third element vital to the full expansion of the rubber industry had thus been provided.⁵

II

Until the overthrow of the monarchy in 1889, the rubber trade was characterized by a steady and reasonable growth.

⁵ *House Miscellaneous Documents*, 33 Cong., 1 Sess., No. 22 (Free Navigation of the Amazon); *House Executive Documents*, 32 Cong., 2 Sess., No. 43 (Exploration of the Valley of the Amazon. Part I, Lieutenant Herndon); *House Executive Documents*, 33 Cong., 1 Sess., No. 53 (Exploration of the Valley of the Amazon. Part II, Lieutenant Lardner Gibbon); *House Reports*, 33 Cong., 2 Sess., No. 95 (The Amazon River); A. C. Tavares Bastos, *op. cit.*, pp. 24 *et seq.*

Production continued to increase in volume, and prices tended to follow suit. Prosperity seemed a normal condition of life for the great centers of Belém and Manáus and their environs. Prices of commodities rose and some men waxed wealthy, but the boom had hardly begun. Rubber was not yet sufficiently in demand; the consumption of the product in Europe was still limited. A sharp economic rise in the valley first became apparent with the sudden emergence of the bicycle craze in the United States in the 1890's and the consequent demand for rubber tires. This coincided with a great increase in the use of rubber for many other articles. The final touch came with the invention of the automobile.⁶

The great boom years may be said to have extended from 1890 to 1910. It cannot, however, be asserted that these two decades witnessed an uninterrupted progression to the high level of three-dollar rubber in the early months of the latter year. Rather was the process a succession of waves which took prices to new levels, each rise being preceded by a sudden drop that brought the market to the brink of ruin. Such declines should have showed the rubber industry that a stabilizing factor was lacking in its economic organization. Each period provoked outbursts among those affected, but there was never at any time any recognition of the basic problems involved.

The first serious decline coincided with the panic of 1893 in the United States and created considerable uneasiness. Subsequently there were several minor declines. Yet all of them were no more than a prelude to the sharp drop of 1907-1908. The mid-months of 1907 had seen the rise of the price of rubber to such a height that many dealers expected to receive as much as two dollars per pound for their product. Hopes were dashed when prices were cut in half in the latter part of the year. This condition lasted until the early months of 1908 and gave rise to endless remorse for past sins. Before anything constructive could be done, the tide turned again, and pious resolutions gave way to boundless optimism. This marked the beginning of the dizzy spiral which culminated in

⁶ *India Rubber World*, *passim*.

1910. In the frenzy which continuing strong prices created, all else was forgotten; and there were those who were heard to have expressed the belief that prices would continue to rise forever. In May, 1910, the top price passed three dollars, and the tension became well-nigh unbearable. Then, with a sudden crash, the flimsy structure collapsed. In one desperate dive prices were cut in half and thereafter continued to fall.⁷ Unfortunately, all future efforts at reconstruction were to be balked by the spectacular growth of Asiatic plantations which had played a conspicuous rôle in ending the hegemony of the Amazon.

III

Not the least interesting aspect of the period of boom and collapse was the life of the men who lived in the valley and stood to profit or lose by market fluctuations. The personnel of the rubber industry was organized into a pyramid at the base of which were the *seringueiros*, or workers, who actually went out into the forests to gather the latex. They were very largely drawn from Ceará, and, in the isolation of the jungle, they were never free from disease, starvation, and exploitation. Their life was a closely controlled one. They brought their stocks of rubber to the *patrão*—the lessee of the area worked by *seringueiros*—and received credit from him, not money, which was used against needed supplies. Since the *seringueiro* could in no other way satisfy his wants, these supplies were sold to him at prices which barely allowed him enough for subsistence.

In return for supplies, the *patrão* disposed of his stocks of rubber through *aviadores*, or agents who made periodic visits to production centers. The former was subjected to much the same vicious system as the *seringueiro*. The agent took his rubber to the merchant princes in the great centers of Belém, Manáus, and Iquitos, whence it found its way to the principal consumption markets of the world. In the end the

⁷ See *Politica Economica, Defesa da Borracha, 1906-1914* (Rio de Janeiro, 1915); *Relatorio da Comissão da Praça do Commercio do Pará, 1868-1900* (Pará, n.d.); *Revista da Associação Commercial do Amazonas, 1903-1918*; and *India Rubber World*.

leading firms and the government, which levied ad valorem taxes that averaged twenty per cent, drew the major share of the profits.⁸

Money was spent recklessly. Broad avenues began to grace colonial cities, and huge government buildings, waterworks, parks, docks, and theatres were built.⁹ The wealthy lived in splendor, importing a wide variety of luxuries. Even in Iquitos, two thousand miles up the Amazon, manufactured articles from abroad could be had in abundance.

When rubber prices dropped from three dollars to one, the economic life of the valley was not able to support the shock. Buildings were deserted, elaborate mansions were left vacant, parks and avenues were abandoned, and grass again grew in many streets. Needless to say, the plight of the *seringueiro* was especially bad. No longer able to buy even the most meager supplies, he had no alternative but to stay in the jungle and rely on his own initiative. Other classes of society were also affected by the *débâcle*. Unfortunately, no significant part of the profits which had been made in the rubber trade was put to productive uses in the valley itself. In the last analysis, the real profits were made by manufacturers, although the work of the *seringueiro* was largely responsible for the prosperity of the rubber industry.¹⁰

One of the little-known aspects of life in the Amazon during the heyday of rubber concerns the several outstanding pioneers who, with a dogged determination, sought the farthest reaches of the valley in the quest for the precious latex. Among the most famous of their number were Funes at San Fernando de Atabapo, Julio César Araña in the Putumayo, and Nicolás Suárez of the Beni River.

In essence, the story of Suárez was the story of seven brothers who crossed the Andes in 1872 from the western part of the continent to see what lay on the other side of the moun-

⁸ Consult Henry C. Pearson, *The Rubber Country of the Amazon* (New York, 1911).

⁹ Lauro B. Bitancourt, *The State of Amazonas* (Chicago, 1893), *passim*.

¹⁰ A wealth of material on this aspect of the boom is to be found scattered throughout the issues of the *India Rubber World*. Also of great interest are occasional passages from the accounts of many travellers. Official documents preferred to overlook this phase of Amazon history.

tains. But Nicolás was the unquestioned leader of the family, and he had the foresight to appreciate the future importance of rubber. He first secured a monopoly of the carrying trade on the Madeira River; then he supplied the local population with provisions. His rubber operations soon began to prosper. At one time he carried more than ten thousand employees on his payroll, including four hundred who devoted themselves exclusively to portage work around the falls of the Madeira.

His headquarters were at Cachuela Esperanza, but he maintained branches throughout the Amazon valley, the Acre, at Manáus, Belém, and London. The business details of the firm were left to his brothers; Nicolás himself was always to be found in the forests, supervising the actual labor. With a nominal capital of four million *bolivianos*, he controlled at least five million hectares of rubber lands, ranges on which grazed a quarter of a million head of his own cattle, a sugar-mill producing ten thousand arrobas of sugar annually, a power plant, an ice plant, and all the provision business of a vast area. His holdings were at one time probably worth between ninety and a hundred million *bolivianos*. In 1912 he refused twelve million pounds offered by an English company for his rubber holdings alone.

Ten years later, rubber in the Beni was practically worthless, but Suárez was far from destitute. He had had the foresight to vary his enterprises. Despite the crash in the rubber market, he was able to maintain his predominant position in the area.¹¹

IV

It would indeed have been surprising if, at some time during the course of the rubber boom, there had not arisen a conflict between the Amazon nations, especially in view of the indeterminate status of many boundaries. The rubber man was no respecter of imaginary lines, and where he could find the coveted product thither he went regardless of political sovereignty.

¹¹ Ciro Torres López, *Las Maravillosas Tierras del Acre* (La Paz, 1930), pp. 227-276; Henry G. Pearson, *op. cit.*, p. 148; *India Rubber World*, April, 1903, and April, 1905; *United States Commercial Reports*, March 20, 1918.

The most notable controversy of the period involved the Acre territory. Long practically uninhabited and subject to the control of Bolivia, the Acre came into prominence when immigrants from Ceará finally penetrated the area and discovered enormous reserves of rubber. By 1900 the Brazilian settlers, who formed the greater part of the population, felt strong enough to contest Bolivian authority, but the rebellion, lacking support, was promptly suppressed.

Anxious to prevent a recurrence of violence, and conscious of her weak position, Bolivia thereupon leased the entire area to an international syndicate to which she granted monopolistic privileges and rights of sovereignty, including the power to police the Acre and collect revenues. The reaction in Brazil was instantaneous and brought a strong protest from the government.¹² Rio de Janeiro insisted that Bolivia had committed an illegal act by surrendering her sovereignty over the region to a private company, and felt that the undertaking constituted a menace to Brazil. Bolivia, however, refused to revoke the concession.

When, in 1902, Brazilians in the disputed territory again rose in revolt, they declared the independence of the region and petitioned for union with Brazil. When the Rio government now threatened to occupy the territory by force of arms if Bolivia should refuse to sell it, Bolivia chose the latter alternative. By the Treaty of Petrópolis of November 17, 1903, the Acre was ceded to Brazil in return for the sum of two million pounds. Ironically enough, the collapse of rubber deprived the Brazilian victory of much economic meaning, and after 1910, Brazil lost much of her interest in developing the area.¹³

¹² The following State Department material (now in The National Archives) may be consulted: Diplomatic Despatches from Bolivia, 1900-1904; Diplomatic Despatches from Brazil, 1899-1905; Diplomatic Notes from the Bolivian Legation in Washington to the Department, 1900-1904; Diplomatic Notes from the Brazilian Legation in Washington to the Department, 1900-1904. See also *The Acre Territory, Documents concerning the Controversy between Brazil and Bolivia over a Contract Made with American Citizens* (Rio de Janeiro, 1903).

¹³ See John Bassett Moore, ed., *Brazil and Bolivia, Boundary Settlement—Treaty for the Exchange of Territories and Other Concessions Signed at Petropolis, November 17, 1903. Together with the Report of Baron Rio Branco, Min-*

V

During the years of rubber pre-eminence, and especially during periods of depression, the charge was frequently made that the Brazilian government took no constructive steps to ameliorate the conditions of the rubber industry. Official interest in the new source of wealth was early limited to the levying of taxes. Throughout the empire, the provincial and central governments shared the revenues. With the promulgation of the republican constitution of 1890, state and municipal authorities were given the exclusive use of the levy on rubber. Taxes were promptly increased; over a period of years they averaged roughly twenty per cent ad valorem, a considerable burden, indeed, on the industry and a perennial source of complaint.¹⁴ There was seldom a year when taxes on rubber did not constitute at least three fourths of all state revenues in the Amazon area.

Prior to 1907 government interest in the industry centered mainly on taxation. Some individuals in high places, to be sure, were aware that unhealthy conditions of a dangerous nature existed, but their words of admonition passed unheeded. A few isolated attempts were made to introduce mildly remedial legislation, but here again all efforts proved abortive. Popular sentiment was in the main indifferent as long as prices continued to rise; periodic drops did not last long enough to make people vitally conscious of evils. From time to time legislation was passed to encourage plantation rubber or stimulate improvements in the technique of handling the wild variety. These efforts failed to secure results, and the old method of wild-rubber gathering continued. In fact, the complaint was usually made that if the government was really interested in the industry, it would lower taxes and stop giving advice.

ister of Foreign Relations (New York, 1904); *Relatorio apresentado ao presidente da república dos Estados Unidos do Brazil pelo ministro de estado das relações exteriores Dr. Olyntho de Magalhães* (Rio de Janeiro, 1902).

¹⁴ *India Rubber World, 1889-1907*; *Relatorio da Comissão da Praça do Comercio do Pará, 1868-1900* (Pará, n.d.); *Política Economica, Defesa da Borracha, 1906-1914* (Rio de Janeiro, 1915); *Laws for the Protection of the Rubber Industry* (New York, 1912).

The sharp decline of 1907-1908 created serious alarm in the market and led to several unsuccessful valorization schemes. The real rush of legislation came after 1910, when it was apparent that a definitive change had taken place in the rubber industry. Imploring appeals were made to Rio, resulting in the rubber defense law of 1912, one of the finest pieces of rubber legislation ever drafted. The drafters of the law realized that the only solution for the Amazon was to compete effectively with Asiatic plantation rubber.

A few voices had long attempted to call the attention of Brazil to the dangers of foreign competition, but the majority of rubber men refused to believe that the plantation method could lower the costs of production or supply the market with sufficient stocks. The realization that this could be done finally produced the Brazilian collapse. The country, however, woke up too late.

The defense law of 1912, in the attempt to make the Amazon a plantation center, offered advantageous concessions to planters, encouraged agriculture, specified improvements in transportation, provided for the organization of hospitals and medical facilities, and sought to attract immigrants. A fifty per cent reduction in export taxes was conceded on planted rubber. Excellent though the measure was, it obtained no results. Adequate appropriations were withheld, and management did not fully understand the opportunities within its reach. Moreover, the Far East enjoyed the great advantage of two decades of preliminary activity. Before the Amazon could be in a position to compete on the market, the British plantations would have successfully controlled consumption. In the face of these handicaps, no concerted planting was undertaken.¹⁵

Meanwhile, valorization schemes were tried. The Bank of Brazil brought itself to the verge of bankruptcy by buying rubber and holding it for a rise in prices which never occurred. Several other banks were organized for the same purpose with the assistance of foreign capital. Organizations of producers agreed to withhold stocks from the market. It was

¹⁵ *Revista da Associação Commercial do Amazonas*, 1903-1918.

even proposed seriously that the government, because of its superior resources, should acquire the entire crop and hold it until the consumer could meet Brazilian demands. What the rubber men apparently did not realize was that the Amazon no longer controlled a sufficiently large proportion of the world crop to make the slightest impression on prices.¹⁶

VI

The Far Eastern rubber industry owes its beginnings to Henry A. Wickam, a British planter from Santarém. In 1876 he smuggled several thousand rubber seeds from Brazil and sowed them in Kew Gardens in London. From there the young plants were sent to Ceylon, where they soon began to thrive. For a long time, the interest of Far Eastern planters in rubber was slight, but reverses in the tea market, the profits from the new product, and the dissatisfaction of manufacturers with natural rubber encouraged a number of individuals to persist in the growing of latex trees. In 1900 a small shipment of plantation sheet rubber from Malaya was offered for auction in London. In 1905 it began to appear regularly; after 1910 the supply from the Orient increased with fantastic rapidity.

In the futile effort to meet foreign competition, large-scale corporations were organized in Brazil for the growing of plantation rubber. The record of failures was disheartening. The Orton Rubber Company, established about the year 1897, eventually found it impossible to continue. Of some two hundred Basque settlers expressively brought over by the concern to Brazil, only six reached the company's property alive. The Amazon Rubber Estates, Limited, found its entire capital of three hundred thousand pounds gone before a single pound of rubber had been collected. The Comptoir Colonial Français, which took over a Brazilian property, lost one million dollars.

The most ambitious attempt was that of the Rubber Estates of Pará, Limited, formed in 1898 with a capital of three hundred and fifty thousand pounds to work an estate on Marajó Island with an estimated one million three hundred

¹⁶ C. E. Akers, *Relatorio Sobre o Valle do Amazonas* (Rio de Janeiro, 1913), pp. 97 et seq.

thousand trees. Despite a previous record of production, the new company, during the first year of operation, collected exactly eighty and three-quarters tons of rubber; during the second, fifty-eight. A reorganization of the concern was agreed upon, but the venture did not prosper. On the contrary, the Rubber Estates reached the extreme of offering its properties for an annual rental of two hundred and fifty pounds.

A number of frankly promotional schemes were also offered to the gullible public. Typical of the hoaxes was the Peru Pará Rubber Company, with a reputed capital of three million dollars and an unlimited number of latex trees in some undisclosed part of South America, which advertised for investors in the Chicago newspapers of 1905. Contributors were promised dividends of seventy-five per cent for life.¹⁷ Obviously, such shams by foreign promoters were not encouraging to those who wished to invest in legitimate enterprises.

The real obstacles in the way of plantation rubber in the Amazon were far more formidable than many people supposed. The greatest problem was labor, for the profitable gathering of latex depended on a large supply of fairly efficient and cheap hands. To be sure, the utilizable population of the valley amounted to about a million persons, but most of them were Indians who found it impossible to adjust themselves to the exigencies of the rubber industry. *Cearenses*, on the other hand, were much more satisfactory, but they perished in great numbers. Again, the government frowned on Oriental and African labor; and Europeans did not arrive in appreciable numbers. No practical solution was found then for the labor problem, nor has it been found today.

The second obstacle was the decay of native agriculture. In colonial times Pará had been self-sufficient in articles of basic consumption and had, in fact, produced an exportable surplus. The concentration on rubber forced dependence on imported foodstuffs which were eventually sold for three to six times their normal price. This was the unfortunate result

¹⁷ *India Rubber World*, October, 1902; November, 1903; March, June, 1904; February, May, 1905.

of the irresistible lure of a cash crop of high value. The *seringueiro* thus found it more profitable to abandon his small garden plot and rely solely on imported articles. Such a supply of labor could hardly have been cheap. Indeed, a respectable share of the profits from the rubber trade probably was devoted to the support of workers who nevertheless lived perilously close to subsistence.¹⁸

The problem of sanitation was equally important. *Seringueiros* were scattered, for the most part, over areas where sanitation was entirely unknown, and were thus exposed to the ravages of jungle fevers and intestinal infections. In many areas, productivity was lowered at least one third through disease. The Brazilian commission that surveyed the state of Pará reported that conditions were bad except in parts of Belém. Moreover, medical facilities were to be found only in urban areas. In his survey made in accordance with the defense law of 1912, Dr. Oswaldo Cruz was shocked by the conditions he saw, but he did not look at the future with pessimism. Though the work would involve a tremendous outlay of money and effort, he believed that the sanitation of the valley was not impracticable.¹⁹

The problem of diet was the natural outcome of the decay of agriculture. The native settler of the Amazon had originally developed a diet which furnished him with the basic elements needed for health. With the development of the rubber industry, the dependence on importations led, in many instances, to disastrous consequences. Owing to high prices, the quantity of food the average *seringueiro* consumed was drastically reduced to an amount barely enough to maintain actual existence. Beri-beri, for example, became a terrible scourge. The effects of malnutrition not only told appallingly

¹⁸ See *Questionários Sobre as Condições na Agricultura dos Municípios do Estado do Pará. Inspeccionados 1910-1912* (Rio de Janeiro, 1913), published by the Brazilian Ministry of Agriculture, Industry, and Commerce. Much material on this subject is also to be found in *Política Económica, Defesa da Borracha, 1906-1914* (Rio de Janeiro, 1915); and in Manuel Barata, *A Antiga Produção e Exportação do Pará* (Belém, 1915).

¹⁹ See the report of Dr. Oswaldo Cruz, cited in *Política Económica, Defesa da Borracha, 1906-1914* (Rio de Janeiro, 1915).

on the individual but also constituted a heavy drain on the rubber industry.²⁰

The cost of transportation was also a heavy burden. Distances were enormous. Some two thousand miles of river separated Belém and Iquitos. The Putumayo was still farther away.²¹ Another factor in the Amazon rubber trade was the speculative character of the industry. The boom may be said to have been a vast speculation in rubber, foodstuffs, labor, and foreign exchange. Part of the uncertainty may be readily understood. Rubber stocks came from wide and oftentimes unknown regions. Furthermore, the flow of latex varied with the rainfall. It was, therefore, impossible to foretell with any reasonable degree of accuracy what the yield in a given year would be.

The several obstacles touched on in the preceding paragraphs combined to make it impossible for the Amazon to compete with the Far East in the rubber trade. At no time did there seem to exist in Brazil a genuine effort to find a hopeful solution to the many problems which confronted the industry. Perhaps Brazilians realized that the Amazon hardly offered the necessary conditions for plantation rubber.

In this connection, it may be well to observe that the best example of the opportunities to be found in the production of plantation rubber, and also of the great difficulties involved, is the Henry Ford experiment in Brazil. Consisting of two and a half million acres one hundred and ten miles up the Tapajoz from its junction with the Amazon, the Ford property was originally obtained in 1927. Production on the plantations at Fordlândia and Belterra is even now beginning on a fair scale. To achieve his ends, Ford was obliged to build a modern town and undertake other extensive improvements. He has not been able to solve the labor problem satisfactorily; he has only with difficulty secured sufficient man-power for the needs of his projects; yet Ford has demonstrated the possibility of eradicating the various diseases which attack the planted tree in the Amazon and of producing a

²⁰ The sources mentioned in note 18 also give information on this point.

²¹ See The Amazon Steam Navigation Company, Ltd., *Notes on the Amazon and its Tributaries and Steamer Services* (London, 1904).

latex that can compete with Asiatic rubber in quality and cost. He has also shown that obstacles to healthful living and sanitation in the valley are by no means insuperable.

VII

The practicability of plantations and the immediate prospect for wild rubber in the Amazon assume a great importance today. The loss of Asiatic sources of supply has, of course, turned the attention of the United States to the potentialities of Brazil's rich valley; and rubber merchants there are endeavoring to satisfy as large a part of the demand as possible. In the main, wild rubber will be involved, since plantations require years of care and preparation before they reach a stage of satisfactory productivity. It is unlikely, however, that the rejuvenation of the wild rubber industry will be accompanied by the mistakes of the past. The bitter lessons of former days have been learned too well to give rise to a false optimism. Present indications are that the new phase of the trade will follow along economic and constructive lines.

To be sure, due recognition is being given to the problems which the possible widespread development of synthetic rubber will create. There seems to be no doubt that the synthetic product is in many respects comparable to the natural one.²² If the former can be manufactured at a reasonable price, the demand for natural rubber will be considerably reduced, although a certain amount of latex will very likely continue to be used.

Even in the event of the complete success of synthetic rubber, the economic life of the Amazon need not suffer. Outside of rubber, the natural resources of the valley have scarcely been touched. A sound course of action would seem to be the exploitation of tropical forest products, drugs, nuts, timber, and plants. A beginning has already been made in such things as the cultivation of *timbó*, a weed used in the manufacture of insecticide.²³ Various rapid investigations have shown that possibilities along similar lines are great and

²² *The New York Times*, February 11, 1940.

²³ Desmond Holdridge, "The Awakener of the Amazon," *This Week*, April 14, 1940.

only need further study to grow into positive results. Undoubtedly, a diversified extractive economy, resting on a solid agricultural foundation, would provide for the Amazon a far more reasonable development than would be possible under the sole rule of rubber.

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